Problem Statement:

Big Mountain Resort wants to evaluate how to increase the yearly revenue by about 5% within the two seasons of skiing?

Context:

Big Mountain Resort is a ski resort located in Montana. It has about 105 trails and yearly visitors of about 350k. It has recently installed an additional chairlift, increasing the operating costs by $1.54 million. In response to this Big Mountain Resort wants to make changes in,

1) Ticketing price
2) Reduce the operating costs

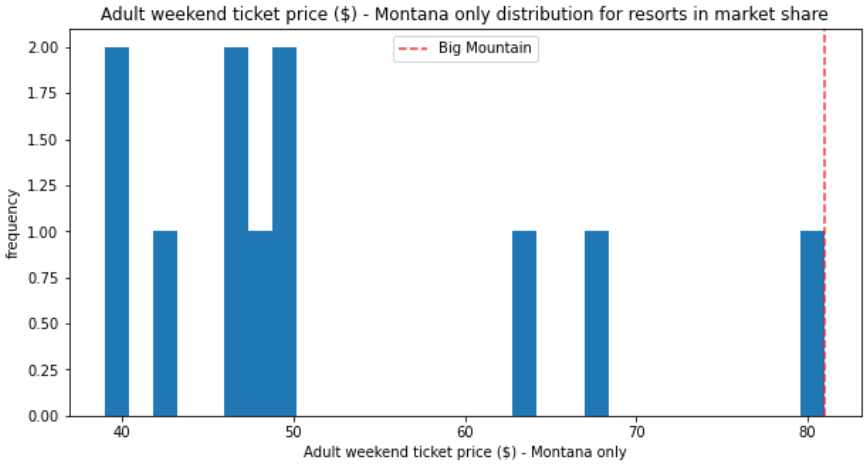
As a result, the resort wants to know how important some facilities are compared to other facilities and are overcharging or undercharging customers in the form of ticket pricing. To analyze this, we have a dataset containing data of 330 resorts located in the US.

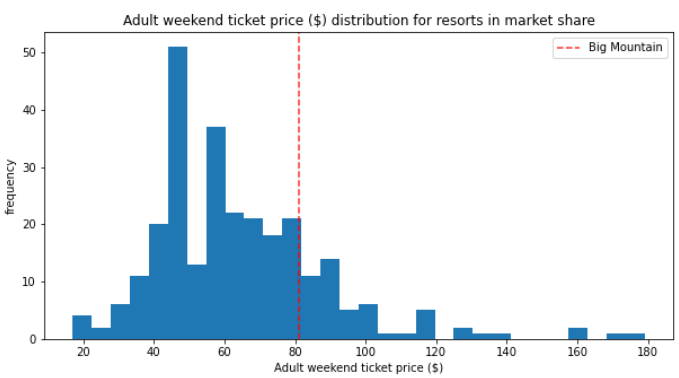
Modeling and Analysis:

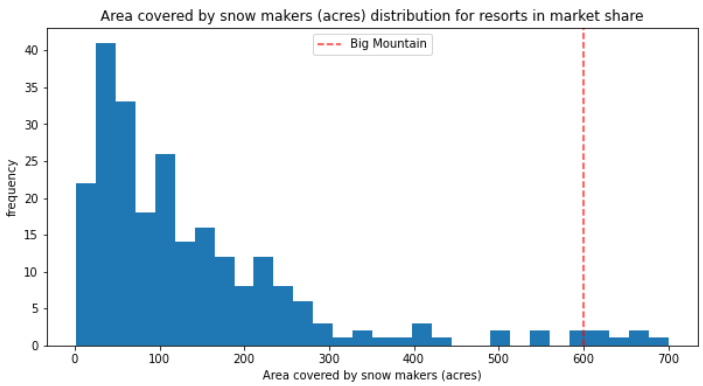
During initial EDA it was found that, although Montana being 3rd largest state, it is less densely populated. It was also observed that total runs and snow making per acre were highly correlated to ticket pricing. This suggests visitors like to value guaranteed snow. Vertical drop also tends to influence the ticket pricing.

We created two models, one linear regression and another random forest regressor. We found that random forest regressor was a better model since it had a mean absolute error of $9.54 or in other terms about variability of $9.54.

Currently the resort is charging $81. Although, highest in Montana our model still predicted that resort pricing be $95.87, which an increase of about $14.87. We have a mean absolute error of about $10.39. Even if we consider that it still suggests an increase in pricing. This is due to the facilities provided by Big Mountain Resort are at a very high end of the spectrum when compared to the other 330 resorts located in the country.



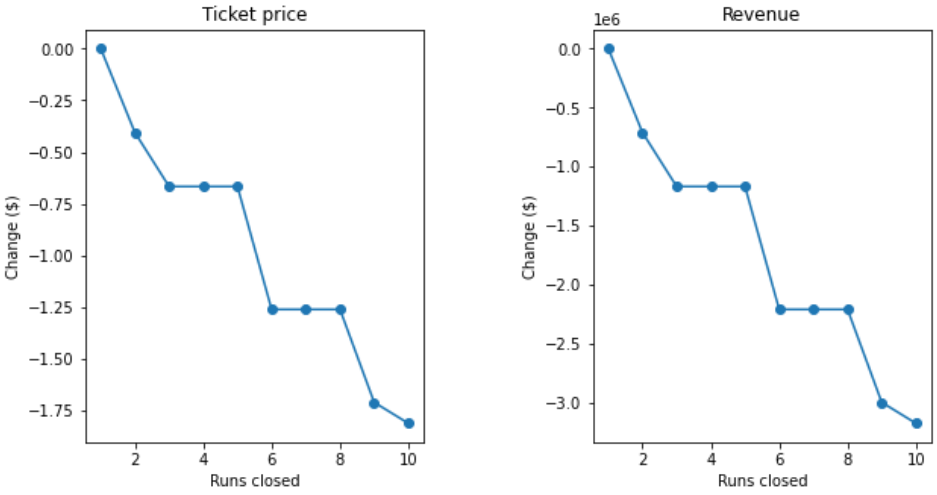




We created 4 scenarios, to check if we cut operating cost or increase ticket pricing.

1. Permanently closing down up to 10 of the least used runs.
2. Increase the vertical drop by 150 ft and install an additional chair lift.
3. Same as number 2 but adding 2 acres of snow making.
4. Increase the longest run by 0.2 mile and additional snow making of 4 acres to cover that.

For scenario 1, we created two plots to analyze this. From the plot it suggests, that closing 3 to 5 runs does have a significant a significant drop in revenue but this will also reduce the operational cost.



For scenario 2, by adding 150 ft vertical drop, it seems to increase by $1.99 increasing our revenue by $3.4 million considering 350k people visit and spend 5 days at resort. This does come with the additional operational costs of an additional lift chair. From our analysis scenario 3 and 4, it didn't have any significant difference in ticket pricing. So, my suggestion would be a combination of scenarios

1 and 2.

Limitations of work and Future Work:

Few of the limitations of my work are:

1) Data didn't have a knowledge of number visitors of on average for other resorts.
2) It is possible that ticket pricing might not be accurate for other resorts.
3) Operating cost of Big Mountain would have been useful in determining the ticket pricing accurately

One of the future work can be to create an UI so that business analysts can analysis different scenarios with other possibilities.